

## **COMMUNITY WATER FLUORIDATION**

Presented by

Utahns for Better Dental Health

\*Adapted from Michael W. Easley, DDS, MPH

### **What is fluoride and how does it reduce tooth decay?**

Fluoride is a naturally occurring element that prevents tooth decay systemically when ingested during tooth development and topically when applied to erupted teeth.

### **What is Fluoride?**

- The fluoride ion comes from the element fluorine.
- Fluorine exists only in combination with other elements as a fluoride compound.
- Fluorine is the 17th most abundant element in the earth's crust.
- Small amounts of soluble fluoride ions are present in all water sources, including the oceans.



### **Fluoride is obtained in two forms:**

**Topical and Systemic**

### **Topical Fluorides**

- Topical fluorides strengthen teeth already present in the mouth.
- Provides local protection on the tooth surface.
- Topical fluorides include toothpaste, mouthrinse and professionally applied fluoride gels and rinses.



### **Systemic Fluoride**

- Are those that are ingested into the body and become incorporated into forming tooth structure.
- Benefits: Provides longer lasting protection and continually bathes the teeth.
- Sources include water, dietary fluoride supplements, food & beverages.

## Community Water Fluoridation

Fluoridation is nutritional supplementation

Adding fluoride to drinking water is no different than adding:

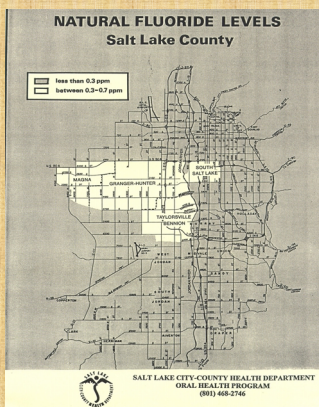
- Vitamin C to Fruit Drinks
- Vitamin D to Milk & Breads
- Iodine to Table Salt
- Folic Acid to Grains, Cereals, & Pasta
- Vitamins & Minerals to Breakfast Cereals



## What is water fluoridation?

Community water fluoridation is the adjustment of the natural fluoride concentration in water up to the level recommended for optimal dental health.

**( a range of 0.7 to 1.2 PPM)**



## Natural Fluoride Levels Salt Lake County

## Why public water supplies as the vehicle?

- Treatment of water for public consumption - a tool used by public health agencies to prevent disease as far back as the 1840's.
- Water treatment for disease prevention is a primary public health activity.

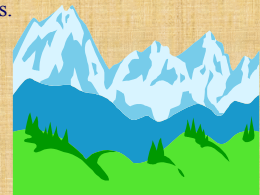
## Water treatment prevents diseases such as:

Amoebic Dysentery	Schistosomiasis
Cholera	Paratyphoid Fever
Diarrhea (E. Coli)	Leptospirosis
Giardiasis	Hepatitis A
Typhoid Fever	Cavities

## Community Water Fluoridation

American Water Works Association:

Established standards for chemicals that are added to public water supplies.





### Chemicals approved to be added to public water supplies:

- Anhydrous ammonia
- Ammonium hydroxide
- Bromine
- Chlorine
- Chlorine dioxide
- Sulfur dioxide
- Ozone
- Charcoal Carbon
- Lithium hypochlorite
- Ferric sulfate
- Clay (Bentonite)
- Sodium aluminate
- Up to 51 chemicals can be added to water depending on the region.

### Community Water Fluoridation

Water treatment chemicals used for:

- |                   |                   |
|-------------------|-------------------|
| Disinfection      | pH control        |
| Absorption        | Iron control      |
| Dechlorination    | Coagulation       |
| Algae control     | Corrosion control |
| Oxidation         | Decolorization    |
| Metal coagulation | Fluoridation      |
| Water softening   | Filtration        |

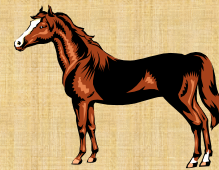
### Community Water Fluoridation

Fluoridation had been practiced in the U.S. for more than 54 years.

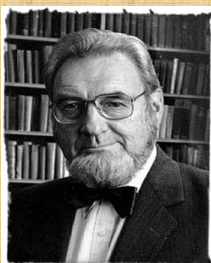
Grand Rapids, Michigan, fluoridated its public water supply on January 25, 1945.

### Community Water Fluoridation

- Described by U.S. Surgeon General Luther Terry as one of the four great advances in public health
- Dr. Terry: “Four Horsemen of Public Health”
  - Chlorination
  - Pasteurization
  - Immunization
  - Fluoridation



### Community Water Fluoridation



“Fluoridation is the single most important commitment a community can make to the oral health of its children and to future generations.”

–Dr. C. Everett Koop  
U.S. Surgeon General,  
1981-1989

### Community Water Fluoridation

- **On May 25, 2000**, The Surgeon General David Satcher MD, Ph.D. introduced the first-ever Oral Health report.
- The report outlines existing safe and effective disease prevention measures including **community water fluoridation**.

## Community Water Fluoridation

- **Fluoridation benefits:**

- Infants
- Children
- Adolescents
- Adults
- Senior Citizens



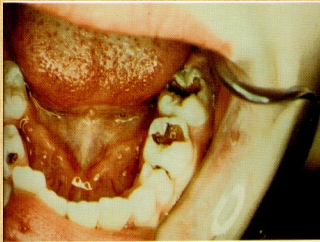
## Local Oral Health Problems



## Community Water Fluoridation

### Oral Health Status of Children in Utah

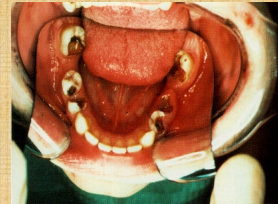
- 65% of 6-8 year old Utah children have at least one decayed or filled tooth vs. 52% nationally.



## Community Water Fluoridation

### Oral Health Status of Children in Utah

- 30% of 6-8 year old Utah children have untreated decay vs. 29% nationally.



## Community Water Fluoridation

### Oral Health Status of Children in Utah

- 36% of 6-8 old children in SLCounty have untreated decay vs. 29% nationally.



## Community Water Fluoridation

### Adult Dental Health

- Fluoridation benefits people of all ages.
- Studies show a decrease in root decay.
- Medications diminishes saliva flow.





### Community Water Fluoridation

Acute fatal poisoning in adults requires the ingestion of 2.5-5.0 grams of fluoride in a 2 - 4 hour time frame.

In drinking fluoridated water at 1.0 ppm, an adult would have to drink 660 gallons in 2 - 4 hours to reach the lower limit of a fatal dose.

### Community Water Fluoridation

A 22 lb. child (12-18 months of age) would have to drink 85 gallons of fluoridated water (1.0 ppm) in 2 - 4 hours to reach the lower limit of a fatal dose.

### Community Water Fluoridation

Severe skeletal fluorosis could only result from drinking 2.6 - 6.6 gallons of fluoridated water (1.0 ppm) daily for 10 - 20 years and only if none of the fluoride was excreted. \*

- There has never been a documented case of skeletal fluorosis from fluoridated water systems.

- \*Actually about 50% of ingested fluoride is excreted

### Community Water Fluoridation

#### **Example of a perfect public health intervention:**

- Does not discriminate against any group
- Large groups protected continuously with no conscious effort on their part to participate
- Works without requiring individuals to gather in central location

### Community Water Fluoridation

#### **Example of perfect public health intervention:**

- Does not require costly services of health professionals to deliver
- No daily dosage schedules to remember
- No foul-tasting oral medications to endure
- No painful inoculations to experience
- All the public has to do is go about their daily normal routine to be protected

### Community Water Fluoridation

#### **Salt Lake County Dental Medicaid Dollars spent annually for FY99 ages 16 years old and under.**

• Expenditures	\$5,968,232
• Recipients	7,366
• Expenditure per recipients	\$810
• General anesthesia expenditure	\$1,297,794

### Community Water Fluoridation

- 1998 national dental cost survey-
  - \$64.00 for one small filling on one tooth (one-surface amalgam filling)



### Community Water Fluoridation

- On average for every \$1 spent on fluoridation, \$80 in dental treatment costs are saved
- Fluoridation has an 80:1 benefit-to-cost ratio

• U.S. Centers for Disease Control

### Community Water Fluoridation

- Those fortunate enough to have had access to community water fluoridation experience 40 - 60 % fewer dental cavities.

### Community Water Fluoridation

- Fluoridation promotes:
  - Lower health care costs
  - Lower insurance costs
  - Lower tax-supported costs for public programs
  - Lower business costs for employers
  - Lower costs for consumer goods and services



### Community Water Fluoridation

Currently in the United States:

- About 144 million Americans are drinking water from community water systems with optimal fluoride levels
- Represents 62% of the population having access to a community water supply

### Community Water Fluoridation

Currently in the United States:

- 14,300 community water systems fluoridate
- These systems serve 10,500 American communities
- 43 of the largest 50 U.S. cities

## Community Water Fluoridation

In Utah, only 3.1 % of the population benefits from fluoridated water.

\*Brigham City, Dugway & Hill Air Force Base, Helper and Ute

## Community Water Fluoridation

Who supports fluoridation?

- National Institutes of Health (1891)
- Centers for Disease Control (1946)
- World Health Organization (1946)
- American Association for the Advancement of Science
- American Council on Science and Health
- American Diabetes Association

## Community Water Fluoridation

Who supports fluoridation?

- American Medical Association (1847)
- American Dental Association (1859)
- American Academy of Pediatrics (1930)
- National Academy of Sciences Institute of Medicine (1863)
- U.S. Public Health Services (1798)

## Community Water Fluoridation

Who supports fluoridation?

- American Public Health Association (1872)
- National Cancer Institute
- American Academy of Allergy
- National Heart, Lung, and Blood Institute
- American Hospital Association
- American Pharmaceutical Association

## Community Water Fluoridation

Who supports fluoridation?

- American Osteopathic Association
- American Society of Clinical Nutrition
- Center for Science in the Public Interest
- American Academy of Family Physicians
- Health Insurance Association of America

## Our community deserves good dental health.

- Fluoridation is proven to reduce dental decay 40-60%.
- Fluoridation eliminates daily drops/tablets.
- We have the technology available to us.
- Fluoridation is proven to be safe, effective, efficient, economical and good public policy.

